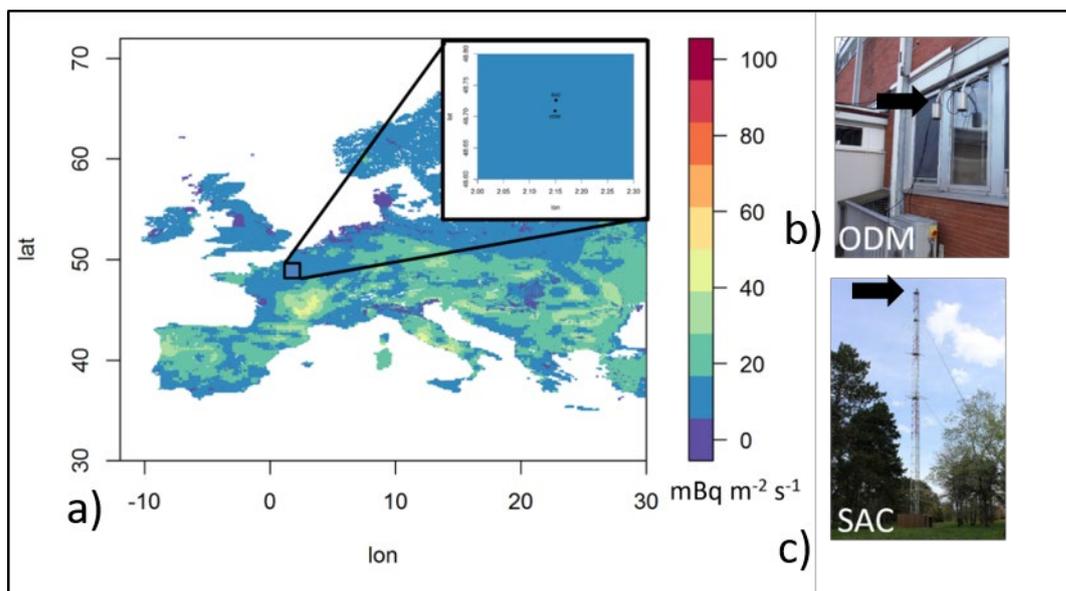


We want to thank Susana Barbosa for her review. The suggestions and comments have been considered. Answers (in blue color) to her specific comments are reported here. The recommended changes within the manuscript will be applied as soon as the open discussion will be ended.

Fig. 1: maybe add small arrows pointing to the inlets, particularly in case (c)

We added black arrows as suggested by the reviewer.



Section 2.3: the first sentence (lines 251-252) is not clear to me... I would also suggest specifying the height at which the meteorological measurements are taken, as well as the atmospheric aerosol concentration

The sentence has been changed to: 'Meteorological data used within this study were available from continuous measurements carried out at the SAC and ODM stations at 100 m and at 10 m a.g.l. respectively. The measurements were carried out with a Vaisala Weather Transmitter WXT520 (Campbell Scientific) for: (1) wind speed and direction (accuracies of $\pm 3\%$ and $\pm 3^\circ\text{C}$, respectively); (2) Humidity and temperature (accuracies of $\pm 3\%$ and $\pm 0.3^\circ\text{C}$, respectively). In addition, the atmospheric aerosol concentration was measured at ODM site using a fine dust measurement device Fidas® 200 S (Palas) at 10 m a.g.l.. The measurement range is between 0 and 20.000 particles cm^{-3} . All the accuracies refer to the manufacturer's specifications.'

Figure 2: possibly display also (maybe as supplemental material) the plot of the difference time series

The authors have discussed this suggestion and they think that may be will be more interesting plotting the time series of the ratios of ^{222}Rn and ^{218}Po measured by ANSTO, HRM and LSCE monitors again the ^{222}Rn measured by the ARMON (i.e. these will represent the temporal change of the correction factors). The following figures will be added to the modified version of the support material.

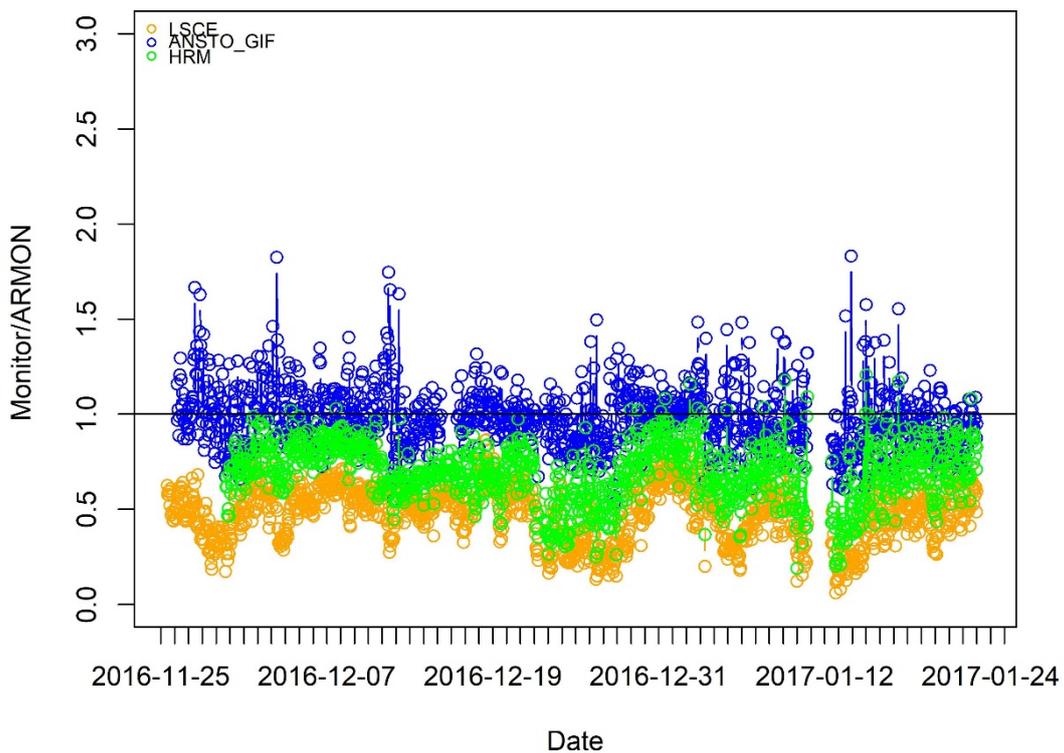


Figure S1. Hourly time series of the ratios between the atmospheric ^{218}Po and ^{222}Rn activity concentration measured by each monitor (HRM, LSCE and ANSTO_ODM) and the one measured by the ARMON at Orme de Merisiers (ODM) station during Phase I (between 25 November 2016 and 23 January 2017).

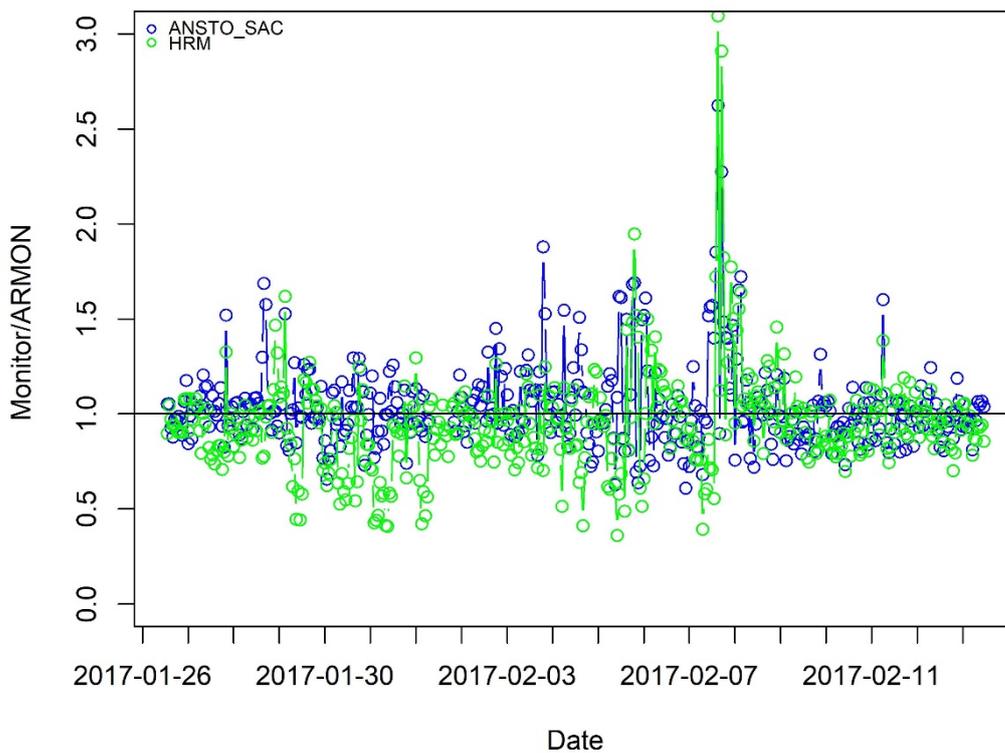


Figure S2. Hourly time series of the ratios between the atmospheric ^{218}Po and ^{222}Rn activity concentration measured by each monitor (HRM and ANSTO_SAC) and the one measured by the ARMON at Saclay (SAC) station between 25 January 2017 and 13 February 2017.

Section 3.3: in my opinion it is not clear that data does not show any evident pattern... for example, at least by eye, seems to me that LSCE and HRM values relative to ARMON as well as relative to ANSTO_ODM show a decreasing trend with temperature...

Actually a small influence has been observed at ODM as suggested by the reviewer. We will add the following paragraph to the modified version of the manuscript:

‘Data does not show any evident patterns at 100 m a.g.l. (SAC station), which could indicate that there is any impact on ^{222}Rn or ^{222}Rn progeny measurements due to change of ambient temperature and relative humidity, at least not until saturated conditions are achieved. At 2 m a.g.l. (ODM station) a small decrease of about $10^{-2} \text{ }^\circ\text{C}^{-1}$ is observed in the ratio between the ^{214}Po activity concentration (measured by HRM and LSCE monitors) and the ^{222}Rn activity concentration (measured by ANSTO_ODM and ARMON monitors) when the increase of the ambient temperature. This temperature dependency may be rather due to the effect of atmospheric activity concentrations, increasing during nighttime, on the disequilibrium between radon and its progeny. However, this influence on measured $^{214}\text{Po}/^{222}\text{Rn}$ ratios seems to be quite small compared with others observed effects (ex.: loss of progeny within the sample tube, rain effects on radon progeny, atmospheric aerosol concentration).’

Page 16, line 421: maybe aerosol loading (instead of aerosol burden)

Change will be applied as suggested.